UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/750,432 | 12/31/2003 | Stephen F. Smith | UBAT1110 | 1772 |

38396 7590 01/16/2007

JOHN BRUCKNER, P.C.
P.O. BOX 490
FLAGSTAFF, AZ 86002

| EXAMINER | |
|---|---|
| BURD, KEVIN MICHAEL | |
| **ART UNIT** | **PAPER NUMBER** |
| 2611 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|---|---|---|
| 3 MONTHS | 01/16/2007 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/750,432 | SMITH ET AL. | |
| | Examiner | Art Unit | |
| | Kevin M. Burd | 2611 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on 27 November 2006.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1,4,6-12,14-19,33-46,49,51-59,61-66 and 68-74 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,4,6-12,14-19,33-46,49,51-59,61-66 and 68-74 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 27 November 2006 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. This office action, in response to the request for continued examination (RCE) and the amendment filed 11/27/2006, is a non-final office action.

### *Continued Examination Under 37 CFR 1.114*

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/27/2006 has been entered.

### *Response to Arguments*

3. Applicant's arguments with respect to claims 1, 4, 6-12, 14-19, 33-46, 49, 51-59, 61-66 and 68-74 have been considered but are moot in view of the new grounds of rejection.

### *Claim Rejections - 35 USC § 101*

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 12, 14, 59, 61, 70 and 71 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims must be amended to be in proper format as disclosed in MPEP 2106. The examiner suggests

claim 12 recite A computer program comprising computer readable instructions embodied on a computer readable storage medium and translatable for implementing the method of claim 1. The examiner suggests claim 14 recite A computer readable storage medium comprising a computer program embodied thereupon for performing the method of claim 1. Claims 59, 61, 70 and 71 require similar correction.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 6, 8, 12, 14-19, 37-44, 46, 62-66, 73 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling (US 7,142,582) in view of Lee (US 6,584,140).

Regarding claims 1, 12 and 14, Schilling discloses a method comprising generating a hybrid spread spectrum signal including modulating a carrier frequency of a direct sequence spread spectrum signal by frequency hopping (column 4, lines 21-31). Schilling does not disclose using fast frequency hopping in the hybrid spread spectrum system. Lee discloses a method of using a fast frequency hopping system (title). Lee discloses the use of fast frequency hopping is advantageous due to high spectrum efficiency, high performance and anti-jamming properties in column 3, line 65 to column 4, line 7 and column 4, lines 12-28). For these reasons, it would have been

obvious for one of ordinary skill in the art at the time of the invention to combine the fast frequency hopping teachings of Lee into the method of Schilling.

Regarding claim 6, the frequency hopping comprises hopping throughout the entire frequency band.

Regarding claim 8, the multi-path immunity is increased when frequency hopping occurs to eliminate interference. This is the reassigning of the bit pattern relationship according to a set frequency-hopping table or sequence.

Regarding claim 15, Schilling discloses an apparatus comprising a transmitter (figure 1A) generating a hybrid spread spectrum signal including a modulator for modulating a carrier frequency of a direct sequence spread spectrum signal by frequency hopping (column 4, lines 21-31). A code generator generates the direct sequence spread spectrum signal. Schilling does not disclose using fast frequency hopping in the hybrid spread spectrum system. Lee discloses a method of using a fast frequency hopping system (title). Lee discloses the use of fast frequency hopping is advantageous due to high spectrum efficiency, high performance and anti-jamming properties in column 3, line 65 to column 4, line 7 and column 4, lines 12-28). For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the fast frequency hopping teachings of Lee into the apparatus of Schilling.

Regarding claims 16-19, Schilling discloses base power means amplifies the frequency-hopped signal to be transmitted (column 5, lines 59-65).

Regarding claims 37, 41-44, 46, 73 and 74, Schilling discloses an apparatus comprising a transmitter (figure 1A) generating a hybrid spread spectrum signal including a modulator for modulating a carrier frequency of a direct sequence spread spectrum signal by frequency hopping (column 4, lines 21-31). A code generator generates the direct sequence spread spectrum signal. The data is split and transmitted by a plurality of antennas to the remote user (column 13, lines 22-25). Schilling does not disclose using fast frequency hopping in the hybrid spread spectrum system. Lee discloses a method of using a fast frequency hopping system (title). Lee discloses the use of fast frequency hopping is advantageous due to high spectrum efficiency, high performance and anti-jamming properties in column 3, line 65 to column 4, line 7 and column 4, lines 12-28). For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the fast frequency hopping teachings of Lee into the apparatus of Schilling.

Regarding claims 38-40, Schilling discloses base power means amplifies the frequency-hopped signal to be transmitted (column 5, lines 59-65).

Regarding claims 62 and 66, Schilling discloses an apparatus comprising a transmitter (figure 1A) generating a hybrid spread spectrum signal including a modulator for modulating a carrier frequency of a direct sequence spread spectrum signal by frequency hopping (column 4, lines 21-31). A code generator generates the direct sequence spread spectrum signal. Schilling does not disclose using fast frequency hopping in the hybrid spread spectrum system. Lee discloses a method of using a fast frequency hopping system (title). Lee discloses the use of fast frequency hopping is

advantageous due to high spectrum efficiency, high performance and anti-jamming properties in column 3, line 65 to column 4, line 7 and column 4, lines 12-28). For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the fast frequency hopping teachings of Lee into the apparatus of Schilling.

Regarding claims 63-65, Schilling discloses base power means amplifies the frequency-hopped signal to be transmitted (column 5, lines 59-65).

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling (US 7,142,582) in view of Lee (US 6,584,140) further in view of Swanke (US 5,521,533).

Regarding claim 4, the combination of Schilling and Lee discloses the method stated above in paragraph 5. The combination does not disclose directly synthesizing a digital signal. Swanke discloses the use of direct digital synthesizers in frequency hopping systems (figure 1). The synthesizers receive synchronized frequency hopping control signals from a frequency spread sequencer. The mixer yields a constant resultant frequency output signal of greatly suppressed signal distortion during the hopping sequence (column 2, lines 25-31). For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the direct digital synthesizer of Swanke into the combination of Schilling and Lee.

7. Claims 7, 9, 10, 33, 34, 36, 49, 51, 53-55, 59, 61, 68 and 70-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling (US 7,142,582) in view of Lee (US 6,584,140) further in view of Alamouti et al (US 6,853,629).

Regarding claim 7, the combination of Schilling and Lee discloses the method stated in paragraph 5. The combination does not disclose the method further comprises time hopping. Alamouti discloses hybrid CDMA systems that employ direct sequence/frequency hopping/time hopping (DS/FH/TH) in column 2, lines 38-46. Data will be sent at intervals determined by the user, will allow the user to know when transmissions will be received and therefore, improve efficiency in the transmission system. Resources can be used for other things when a transmission is not expected. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the teachings of Alamouti into the combination of Schilling and Lee.

Regarding claims 9 and 10, the combination of Schilling and Lee discloses the method stated in paragraph 5. The combination does not disclose splitting the hybrid signal into two identical components and modulating one of the components wherein the two antennas define an orthogonal polarization. Alamouti discloses using polarization diversity to enable a base station to efficiently communicate with many remote stations (column 7, lines 28-32). This is possible because the antennas at the base station are designed to distinguish orthogonally polarized signals (column 7, lines 32-38). The antennas are shown in figure 1. For this reason, it would have been obvious

for one of ordinary skill in the art at the time of the invention to combine the teachings of polarization diversity of Alamouti into the combination of Schilling and Lee.

Regarding claims 33, 34, 68, 70 and 71, Schilling discloses a method comprising generating a hybrid spread spectrum signal including modulating a carrier frequency of a direct sequence spread spectrum signal by frequency hopping (column 4, lines 21-31). Schilling does not disclose using fast frequency hopping in the hybrid spread spectrum system. Lee discloses a method of using a fast frequency hopping system (title). Lee discloses the use of fast frequency hopping is advantageous due to high spectrum efficiency, high performance and anti-jamming properties in column 3, line 65 to column 4, line 7 and column 4, lines 12-28). For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the fast frequency hopping teachings of Lee into the method of Schilling. The combination does not disclose splitting the hybrid signal into two identical components and modulating one of the components wherein the two antennas define an orthogonal polarization. Alamouti discloses using polarization diversity to enable a base station to efficiently communicate with many remote stations (column 7, lines 28-32). This is possible because the antennas at the base station are designed to distinguish orthogonally polarized signals (column 7, lines 32-38). The antennas are shown in figure 1. For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of polarization diversity of Alamouti into the combination of Schilling and Lee.

Regarding claim 36, Alamouti further discloses hybrid CDMA systems that employ direct sequence/frequency hopping/time hopping (DS/FH/TH) in column 2, lines 38-46. Data will be sent at intervals determined by the user, will allow the user to know when transmissions will be received and therefore, improve efficiency in the transmission system. Resources can be used for other things when a transmission is not expected.

Regarding claims 49, 51, 53, 59 and 61, Schilling discloses a method comprising generating a hybrid spread spectrum signal including modulating a carrier frequency of a direct sequence spread spectrum signal by frequency hopping (column 4, lines 21-31). Schilling does not disclose using fast frequency hopping in the hybrid spread spectrum system. Lee discloses a method of using a fast frequency hopping system (title). Lee discloses the use of fast frequency hopping is advantageous due to high spectrum efficiency, high performance and anti-jamming properties in column 3, line 65 to column 4, line 7 and column 4, lines 12-28). For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the fast frequency hopping teachings of Lee into the method of Schilling. The combination does not disclose the method further comprises time hopping. Alamouti discloses hybrid CDMA systems that employ direct sequence/frequency hopping/time hopping (DS/FH/TH) in column 2, lines 38-46. Data will be sent at intervals determined by the user, will allow the user to know when transmissions will be received and therefore, improve efficiency in the transmission system. Resources can be used for other things when a transmission is not expected. For these reasons, it would have been obvious for

one of ordinary skill in the art at the time of the invention to incorporate the teachings of Alamouti into the combination of Schilling and Lee.

Regarding claim 54, the frequency hopping comprises hops thought the entire frequency band.

Regarding claim 55, the multi-path immunity is increased when frequency hopping occurs to eliminate interference. This is the reassigning of the bit pattern relationship according to a set frequency-hopping table or sequence.

Regarding claims 56 and 57, Alamouti further discloses using polarization diversity to enable a base station to efficiently communicate with many remote stations (column 7, lines 28-32). This is possible because the antennas at the base station are designed to distinguish orthogonally polarized signals (column 7, lines 32-38). The antennas are shown in figure 1

Regarding claim 72, the multi-path immunity is increased when frequency hopping occurs to eliminate interference. This is the reassigning of the bit pattern relationship according to a set frequency-hopping table or sequence.

8. Claims 11 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling (US 7,142,582) in view of Lee (US 6,584,140) further in view of Becker (6,726,099).

Regarding claim 11, the combination of Schilling and Lee discloses the method stated above in paragraph 5. The combination does not disclose the method comprising transmitting the signal to a radio frequency tag and receiving information from the radio

tag. Becker discloses transmitting an RFID tag and receiving information from the tag (figures 1 and 2). It is known to attach RFID tags to articles to be monitored (column 1, lines 41-55). This can be used for security or for inventory management. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the RFID transmission and reception system of Becker into the combination of Schilling and Lee.

Regarding claim 45, the combination of Schilling and Lee discloses the apparatus stated above in paragraph 5. The combination does not disclose the apparatus comprises a radio frequency tag. Becker discloses transmitting an RFID tag and receiving information from the tag (figures 1 and 2). It is known to attach RFID tags to articles to be monitored (column 1, lines 41-55). This can be used for security or for inventory management. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the RFID tag of Becker into the combination of Schilling and Lee.

9. Claim 35 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling (US 7,142,582) in view of Lee (US 6,584,140) further in view of Alamouti et al (US 6,853,629) further in view of Swanke (US 5,521,533).

Regarding claim 35, the combination of Schilling, Lee and Alamouti discloses the method stated above in paragraph 7. The combination does not disclose directly synthesizing a digital signal. Swanke discloses the use of direct digital synthesizers in frequency hopping systems (figure 1). The synthesizers receive synchronized frequency

hopping control signals from a frequency spread sequencer. The mixer yields a constant resultant frequency output signal of greatly suppressed signal distortion during the hopping sequence (column 2, lines 25-31). For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the direct digital synthesizer of Swanke into the combination of Schilling, Lee and Alamouti.

Regarding claim 52, the combination of Schilling, Lee and Alamouti discloses the method stated above in paragraph 7. The combination does not disclose directly synthesizing a digital signal. Swanke discloses the use of direct digital synthesizers in frequency hopping systems (figure 1). The synthesizers receive synchronized frequency hopping control signals from a frequency spread sequencer. The mixer yields a constant resultant frequency output signal of greatly suppressed signal distortion during the hopping sequence (column 2, lines 25-31). For this reason, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the direct digital synthesizer of Swanke into the combination of Schilling, Lee and Alamouti.

10. Claim 58 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling (US 7,142,582) in view of Lee (US 6,584,140) further in view of Alamouti et al (US 6,853,629) further in view of Becker (6,726,099).

Regarding claim 58, the combination of Schilling, Lee and Alamouti discloses the apparatus stated above in paragraph 7. The combination does not disclose the apparatus comprises a radio frequency tag. Becker discloses transmitting an RFID tag and receiving information from the tag (figures 1 and 2). It is known to attach RFID tags

to articles to be monitored (column 1, lines 41-55). This can be used for security or for inventory management. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the RFID tag of Becker into the combination of Schilling, Lee and Alamouti.

Regarding claim 69, the combination of Schilling, Lee and Alamouti discloses the method stated above in paragraph 7. The combination does not disclose the method comprising transmitting the signal to a radio frequency tag and receiving information from the radio tag. Becker discloses transmitting an RFID tag and receiving information from the tag (figures 1 and 2). It is known to attach RFID tags to articles to be monitored (column 1, lines 41-55). This can be used for security or for inventory management. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to combine the RFID transmission and reception system of Becker into the combination of Schilling, Lee and Alamouti.

## ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin M. Burd
1/9/2007

KEVIN BURD
PRIMARY EXAMINER